

TENSILE STRENGTH RATIO (TSR) TEST WORKSHEET

Gyratory Compactive Method

Mix Design #:

Date Mix Produced:	[1]	Mix Type:	[5]	JMF No.:	[9]
Contractor:	[2]	Plant Location:	[6]	Plant Cert. No.:	[10]
Additive Supplier:	[3]	Additive Grade:	[7]	Additive Dosage:	[11]
Date Compacted:	[4]	No. Gyration:	[8]	To height:	Date Test Completed: [12]

SPECIMEN NUMBER	1	2	3	4	5	6	7	8
DIAMETER(in) (a)								
THICKNESS(in.) (b)								
DRY MASS IN AIR (c)								
SSD MASS IN AIR (d)								
MASS IN WATER (e)								
VOLUME (d - e) (f)								
BULK SP. GR. (c ÷ f) (g)								
MAX. SP.GR. (From Actual Rice Test) (h)								
% AIR VOIDS (100 X (h - g) ÷ h) (i)								
VOLUME AIR VOIDS (i X f) ÷ 100 (j)								
PEAK LOAD (psi) (k)								
DRY TS (2000 X k) ÷ (a X b X 3.1416) (l)								
CALC SSD AT 70% SAT. (0.70 X j) + c [13]								
CALC. SSD AT 80% SAT. (0.80 X j) + c [14]								

SATURATED	MINUTES @	[15]	"Hg					
DATE AND TIME IN:		[16]		DATE AND TIME OUT:				
SSD MASS		(m)						
MASS IN WATER		(n)						
VOLUME (m - n)		(o)						
VOL. ABS. H ₂ O (m - c)		(p)						
% SATURATION 100 X (p ÷ j)		[17]						

CONDITIONED 24 HOURS IN 140 DEGREE WATER

SSD MASS (q)								
MASS IN WATER (r)								
VOLUME (q - r) (s)								
VOLUME ABS. H ₂ O (q - c) (t)								
% SATURATION 100 X (t ÷ j) [18]								
PEAK LOAD (Newton's) (u)								
WET TS (kPa) (2000 X u) ÷ (a X b X 3.1416) (v)								
INTERNAL SPECIMEN TEMPERATURE (°F) [19]								

	Aver. VTM	Aver. Saturation	Aver. Temp.	Median TS	QA/QC Joint Test?	TESTED BY: [30]
Dry Subset	[20]		[23]	[25]		CERT. NO.:
Wet Subset	[21]	[22]	[24]	[26]	Circle One	TESTED BY: [31]
				[27]	Yes No	CERT. NO.:
TENSILE STRENGTH RATIO				[28]		LAB LOCATION: [32]
QA/QC COMPARATIVE TSR						LAB CERT NO.:
				[29]		Comments: [33]
	None	Minor	Moderate	Severe		

Note: Attach proposed M&T 601 form when TSR specimens are being submitted to QA

M&T 612**TENSILE STRENGTH RATIO (TSR) TEST WORKSHEET**

GENERAL NOTE: This form is to be completed whenever a TSR test is required. It is also submitted with a mix design request to the Materials and Tests Unit for the issuance of a Job Mix Formula.

1. Date Mix Produced – Date TSR test was taken
2. Contractor producing mix
3. Additive (Antistrip) supplier
4. Date TSR specimens were compacted
5. Mix Type
6. Plant location
7. Additive grade
8. Number of Gyration
9. JMF Number
10. Plant certification number – HiCAMS AS-#
11. Additive dosage
12. Date test completed

The following cells will be calculated 4 times each for dry and 4 times for the wet specimens:

13. Calculated SSD @ 70 % moisture	a) Specimen Diameter
14. Calculated SSD @ 80 % moisture	b) Specimen Thickness
15. Saturated minutes @ No. of inches of Hg (mercury)	c) Dry mass in air
16. Input the time in and out of the water bath	d) SSD mass in air
17. % Saturation	e) Mass in water
18. % Saturation	f) Specimen Volume
19. Internal Specimen Temperature	g) Bulk Specific Gravity
20. Average VTM for dry pills	h) Maximum Specific Gravity – Rice test
21. Average VTM for wet pills	i) % Air Voids
22. Average % Saturation for wet pills	j) Volume of Air Voids
23. Average internal temperature for dry pills	k) Peak Load – dry sub set only
24. Average internal temperature for wet pills	l) Dry Tensile Strength
25. Median Tensile Strength for dry pills	m) SSD Mass
26. Median Tensile Strength for wet pills	n) Mass in Water
27. Tensile Strength Ratio	o) Specimen Volume
28. Results of comparative TSR test performed by either QA or QC	p) Volume of absorbed water
29. Check a box to indicate the stripping on the broken pills.	q) SSD Mass
30. Technician who performed the TSR test & Certification No.	r) Mass in water
31. Second Technician (if applicable) & Certification No.	s) Specimen Volume
32. Lab where the TSR test was performed.	t) Volume of Absorbed Water
33. Comments about the test.	u) Peak Load – wet subset only
	v) Wet Tensile Strength